NAVIGATION SYSTEM INCLUDING A DRIVE FOR READING OUT NAVIGATION DATA
AND A METHOD FOR OPERATING A NAVIGATION SYSTEM

FIELD OF THE INVENTION

The present invention relates to a navigation system including a drive for reading out navigation data which is stored on a data medium. A pregap exists on the data medium in addition to the

5   navigation data. The present invention also relates to a method for operating a navigation system including a drive for reading out navigation data from a data medium which in addition has a pregap, logically ranked above the navigation data.

10   BACKGROUND INFORMATION

In order to protect digital data media, CD-ROMs in particular, from unauthorized duplication, a plurality of commercial products for preventing duplication without impairing the compatibility with the wide variety of existing play-back devices are available on

15   the market. However, the ~~known~~conventional methods may be circumvented with more or less effort, so that there is a risk of unauthorized duplication and usage of such data media duplicated without authorization.

20   SUMMARY

~~The~~An object of the present invention is to provide a navigation system and a method for operating a navigation system using which effective copy protection for data media with navigation data may be provided.

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According to an example embodiment of the present invention, ~~this object is achieved by a navigation system having the features of Claim 1 and by a method having the features of Claim 5. Due~~due to the fact that identification information, which may be read out

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by the drive, is stored in the pregap of the data medium, it is possible that usage of the navigation data on the data medium may be linked to the existence of such identification data or the existence of correct identification data. Since the standard

5   duplicating equipment is not in the position to identify a pregap and copy it, an appropriate design of the pregap content makes it possible to restrict usage or to grant a usage right. The rest of the navigation data may be read out only when the identification data, e.g., a copyright note, is actually present in the pregap.

10   Furthermore, it ~~is~~may be provided that a usage authorization is issued only when very specific identification data is present, i.e., the rest of the navigation data may only be read out when the identification data is compatible with verification data stored in the navigation system.

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Data media may thus be manufactured for a specific device or a line of devices. Even if the pregap could also be duplicated, the usage of the data medium would be restrictable to a certain line of models or to certain serial numbers of the respective navigation devices.

20   Duplication would thereby lose its appeal since it would not be able to be ensured that the duplicated data media would actually function in the present device.

A refinement of the present invention provides that the data media

25   are designed as CD-ROMs since they are widely used, robust, and easy to operate. Of course, alternative data media, such as a DVD, may be used, as long as the drive is able to recognize the data formats.

30   The pregap is advantageously provided with the physical address 0:00.0, and at the end of the pregap which is at the physical address 0:02.0, for example, the logical addressing starts with address 0 in order to prevent access by conventional CD burners or other duplicating equipment. The start of the pregap would theoretically

have the logic block address -150. That part of the data medium, which in ISO 9660 data systems cannot be addressed due to logic block addressing instead of physical addressing, is understood to be the pregap. The usage authorization data, identification data,

5   or a copyright is stored in this pregap which has a length of two seconds, for example. Only in the presence of this data is the rest of the data released.

BRIEF DESCRIPTION OF THE DRAWING

10   An example of the present invention is explained in greater detail in the following based on the ~~attached figure~~Figure.

The ~~sole figure~~Figure shows a schematic representation of the data structure on a data medium.

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DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

The ~~figure~~Figure shows a data track 1 which is composed of a pregap 2 and a useful data track 3. The physical address of pregap 2 as well as of useful data track 3 is plotted below data track 1. At

20   the start of pregap 2, the physical address is made up of zeros, namely 0 min runtime and 0 sec runtime at frame 0. A runtime of two seconds has elapsed at the end of pregap 2, the physical address 00 being indicated as the frame. Useful data track 3 including the navigation data, which occupies the remaining memory space,

25   follows pregap 2, the remaining memory space being 74 minutes on a regular CD, which can be seen in the lower right corner of the figure. The last logic block address "665850" is shown in the upper right corner of the figure.

30   At the start, pregap 2 is provided with the physical address 0:00.0 and at the end of the pregap, which is at the physical address 0:02.0, logic addressing, which is plotted on top, starts with the address 0 in order to prevent access by conventional CD burners or other duplicating equipment. The start of the pregap would theoretically

have the logic block address "-150." Only after the pregap, useful data track 3 starts with the appropriate logic block addresses "0" to "665850."

5   The read drive used (not shown) is able to read pregap 2 of a CD even though pregap 2 in ISO 9660 data systems cannot be addressed due to the deviating type of addressing (logic block addressing instead of physical addressing).

10   The program implemented here adds a two-second data block 2 in which a copyright is stored, for example, to the finished navigation CD. It is now possible to burn CDs having a predefined pregap 2 using which the existence of the copyright in the navigation system may be checked. If the copyright does not exist, the CD will be rejected.
15   Duplication of this CD using a standard CD burner is not possible.

~~Abstract~~ <u>ABSTRACT</u>

~~Described is a~~<u>A</u> navigation system including a drive for reading
out navigation data which is stored on a data medium. In addition
5   to the navigation data ~~(3)~~, a pregap ~~(2)~~ is present on the data
medium in which identification data is stored. The drive is
designed in such a way that it is able to read CD information in
the pregap ~~(2)~~ and compares the identification data stored in the
pregap ~~(2)~~ to predefined data to allow or deny access to the
10 navigation data ~~(3)~~.

~~Figure~~